Environmental Resources Management (ERM) has prepared this *Final Remedial Action Plan for Area 1 Soil and Ground Water* (Final RAP) for the Old Hammer Field site (OHF) in Fresno, California. This Final RAP has been prepared on behalf of the Old Hammer Field Steering Committee (OHFSC), which includes the City of Fresno, the United States Army Corps of Engineers (USACE), the Boeing Company, and the United States National Guard Bureau (NGB). This RAP meets the basic requirements of the *Official Policy/Procedure, Document Number: EO-95-007-PP* and the *National Contingency Plan* (NCP) (40 Code of Federal Regulations Part 300). This RAP addresses impacts to Area 1 soils, soil vapor, and ground water.

OHF encompasses approximately 1,598 acres northeast of downtown Fresno, California (Figure 1-1). The OHF boundaries are based on the historical perimeter of the former Hammer Field Army Air Base, and correspond closely to the perimeter of the Fresno-Yosemite International Airport. Area 1 of the OHF has historically had the most intensive industrial activity, and is the subject of this Final RAP. Several phases of investigation were conducted in Area 1 from 1992 through 2000, and the *Final Area 1 Remedial Investigation Report, Old Hammer Field, Fresno, California* (ERM, 2000) contains a detailed evaluation of the different phases of soil, soil vapor, and ground water remedial investigation (RI) that have been completed in Area 1 of OHF.

The RI concluded that the primary environmental concern associated with Area 1 is chlorinated volatile organic compounds (VOCs) in soil and ground water. A chlorinated VOC plume originates in Area 1 and extends southwest beyond the original boundaries of OHF (Figure 1-2). Trichloroethylene is the dominant compound in terms of concentrations and areal extent. The plume is more than 2-miles long and extends from the water table at approximately 100 feet below ground surface (bgs) to depths below 300 feet bgs. The impacted aquifer is pumped intensively in the region for domestic, municipal, agricultural, and industrial water supplies.

In addition, the California Air Nation Guard (CANG) Base, which is located within the boundaries of OHF, was identified as the source of VOCs to ground water during a separate RI of the Base. A tetrachloroethene (PCE) ground water plume has been identified emanating from the CANG Base. The PCE plume extends approximately

1,500 feet southwest of McKinley Avenue, and is fully encompassed by the Area 1 VOC plume.

A Human Health Risk Assessment was performed for the Area 1 soil, soil vapor, and ground water. The assessment was summarized within the *Area 1 Health Risk Assessment Addendum* (ERM, 2002a), which was completed in February 2002. The Health Risk Assessment was based on the data collected during the RI and drew the following conclusions:

- Chemical constituents identified in soil and soil vapor under either a residential or industrial risk scenario do not pose unacceptable health risks; and
- VOCs identified in both on- and off-site ground water exceeded the DTSC's benchmarks for evaluation of acceptable risk.

Based on the results of the RI and the Health Risk Assessment, remedial action objectives (RAOs) were developed to address health risks and ensure ground water resources are protected. RAOs were based on a combination of health-based remedial goals, applicable or relevant and appropriate requirements, beneficial uses of site resources, and ground water protection remedial goals.

In order to meet the RAOs and to ensure that VOC concentrations in soil vapor and ground water do not exceed the remedial goals, a Feasibility Study (FS) was conducted to evaluate potential remediation alternatives. The FS identified and evaluated the following four remediation options:

- Alternative 1: No Action.
- Alternative 2: Institutional/Engineering Controls, Long-term Monitoring.
- Alternative 3: Institutional/Engineering Controls, Long-term Monitoring, Source Area Treatment.
- Alternative 4: Institutional/Engineering Controls, Long-term Monitoring, Source Area Treatment, Toe-of-Plume Ground Water Extraction.

The four remedial alternatives were evaluated based on nine separate criteria, as set forth in the NCP. The FS determined that Alternative 4, Institutional/Engineering Controls, Long-term Monitoring and Source Area Treatment, Toe-of-Plume Ground Water Extraction, is the preferred remedial alternative for Area 1. Alternative 4 protects human health, restores the beneficial uses of on- and off-site ground water through active

remediation, and includes long-term ground water monitoring to track remediation progress.

Two methods of ground water extraction were considered for Alternative 4:

- Installation of two new remediation extraction wells (Alternative 4A); or
- The continuous operation of Bakman Well B-14 (Alternative 4B).

Both ground water extraction methods perform similarly, however, Alternative 4B is more cost-effective and has the added benefit of providing needed water to the community. Therefore, Alternative 4B is the preferred alternative. However, implementation of Alternative 4B will require the development of an agreement between the OHFSC and the Bakman Water Company for the use of Well B-14 for plume capture. If an agreement cannot be reached, Alternative 4A will be implemented instead.

The Administrative Record List for this site is included as Appendix A.